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The bacillus is pleomorphic, tends to form threads and non-branching filaments, but is not strictly hemophilic, nor does it manifest the phenomenon of symbiosis in cultures. It should not be classed in the influenza group.

This bacillus is identical culturally and in many respects morphologically with a bacillus which caused an epidemic of pleuropneumonia in rabbits. In small doses the latter produces subcutaneous abscesses similar in every respect to those caused by the abscess bacillus. The abscess bacillus by intratracheal injection may cause pneumonia.

Agglutinins have not been noted in the sera of infected animals.

## GENERAL GONOCOCCUS INFECTION IN A MALE CHILD WITHOUT EVIDENCE OF URETHRITIS.\*

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The patient, a boy aged two and one-half years, was admitted to the Scarlet Fever Hospital of the Department of Health on the service of Dr. Alfred Hess on June 14. He gave an indefinite history of scarlet fever three weeks previously.

*Physical examination.*—No eruption on body. Desquamation on palms and soles. General anasarca. Face and eyelids very puffy. Heart: soft, systolic whiff over the aortic area. Second sound accentuated. Area of cardiac dullness increased three centimeters to the left. Lungs: Slightly high-pitched breathing over the left apex in front. Temperature: 100° F., pulse 170, respiration 22. Urine: Sp. Gr. 1022, acid, marked trace of albumin, many granular casts, much free blood. The patient was very apathetic.

*Subsequent condition.*—During the next few days the condition of the kidneys showed marked improvement under diuretic and diaphoretic treatment. The pulse, however, continued to be very rapid.

June 27, the left elbow and knee became swollen and very tender, evidently containing fluid. This was preceded for several days by a marked rise of temperature, 102° to 103° F. The condition was regarded as due to a scarlatinal arthritis. During the next two weeks the affected joints continued to be in practically the same condition. The pulse was rapid, the afternoon temperature 101° to 102°. The patient was extremely emaciated.

July 17, there was an exudation on both tonsils and posterior pharynx. Cultures showed diphtheria bacilli. Ten thousand units of antitoxin were given. This condition cleared rapidly. There was a swelling, the size of a hen's egg, over the right sterno-clavicular articulation, which developed within a few days into an abscess from which pus, aspirated under conditions to prevent contamination, was sent to the laboratory for examination. Gonococci were found to be present. The abscess was then opened and drained. The temperature and pulse, which had risen during the formation of the abscess, fell somewhat after the operation. A blood culture taken on this day to determine if general sepsis was present proved negative.

July 24, the left shoulder was swollen and painful. It was incised and drained five days later, a quantity of thick pus evacuated and sent to the laboratory for examination, and gonococci found.

August 4, as the presence of gonococci was definitely determined in the abscesses, vaccine treatment was begun, 100,000,000 of a polyvalent preparation being given.

August 9, a blood culture to determine the presence of gonococci proved negative. At the time of beginning specific treatment the open wound in the sterno-clavicular regions was practically healed. The opening about the left shoulder joint showed

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flabby granulations and much discharge. The left knee joint was greatly swollen and contained fluid. It was exceedingly tender to the touch or on attempting passive movement. The leg was held stiffly at right angles. The left elbow joint showed practically an identical condition. The patient was greatly emaciated. A week after beginning treatment the local and general condition began to improve rapidly, the swelling and tenderness growing less from day to day and the patient began to eat and gain flesh. The course of vaccines is indicated on the temperature chart.

At the time of his discharge from the hospital on August 24 he was fairly well nourished and seemed well. The involved joints were moderately thickened. There was little or no pain on active or passive movement. There was, however, in the elbow joint marked crepitation on passive movement, probably an evidence of some

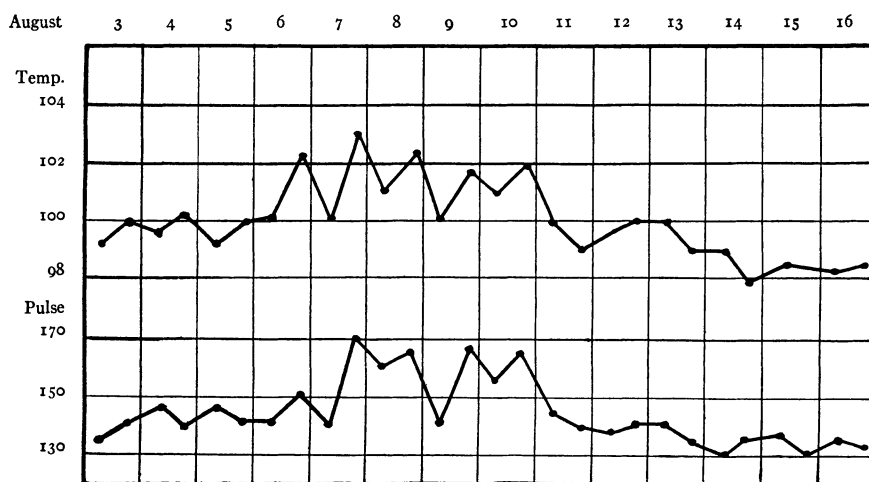


CHART 1.—Temperature and Pulse Curves.

Vaccine administered August 4, 7, 9, and 14 in doses of 100 million, 100 million, 150 million, and 200 million strength respectively.

Blood culture made August 9.

permanent damage. The wound in the shoulder had been completely healed for some 10 days. There was no apparent abnormality to be made out in the heart although the pulse rate continued above normal.

During the patient's stay in the hospital a number of small abscesses developed about the face and extremities. Cultures from them showed only staphylococci, and they healed readily after incisions. A circumscribed necrosis opposite two teeth in the lower jaw yielded rather slowly to local applications. Smears from the necrotic area showed mixed bacteria with many fusiform bacilli and spirochaetes.

There had never been the slightest evidence of urethritis as shown by discharge or difficulty in urination during the patient's stay in the hospital nor had the parents noted any such symptoms before his admission. With the object, however, of determining the point of entry of the invading organism, a number of urethral cultures were made together with one from the tonsils. The latter proved negative. The results of the former together with those from the affected joints are as follows:

*Urethra*.—1st culture—unsatisfactory, negative.

2d culture—gave a gram negative bacillus.

3d culture—on ascitic plates showed typical gonococcus colonies, fishings from which gave gram negative cocci morphologically identical with gonococci.

4th culture—negative.

5th culture—smear from swab showed intracellular gram negative diplococci, cultures from swab on ascitic agar plates gave gonococcus colonies after 24 hours, fishings from which showed a pure culture of morphologically typical gonococci.

*Sterno-clavicular Joint*.—Cultures showed a symbiotic growth of gram negative diplococci and gram negative bacilli; the former could not be isolated in pure cultures.

*Shoulder*.—Smears from the pus showed intracellular gram negative diplococci. Blood-streaked agar plates after 48 hours showed typical gonococcus colonies, fishings from which gave morphologically typical gonococci in pure culture.

*Complement fixation*.—Pure cultures of the gram negative cocci from the shoulder and urethra autolyzed at 56° in distilled water for 24 hours used as an antigen and tested against gonococcus immune rabbit's and horse's blood gave in each instance a high degree of fixation.

#### CONCLUSIONS.

1. Although two blood cultures failed to show the gonococcus, it is evident that the blood stream carried this organism to the widely distant points of localized infection.

2. The gram negative bacillus found in symbiosis with the gram negative coccus in the sterno-clavicular joint was in all probability identical with that found in the urethra and carried from it to the joint together with the gonococcus.

3. The fact that two of the joints did not suppurate is no reason for regarding their condition as due to the invasion of other organisms than the gonococcus, especially in view of the promptly beneficial action on them produced by specific treatment.

4. The presence of virulent gonococci in the male urethra does not necessarily cause recognizable local symptoms.